AMENDMENTS TO THE SPECIFICATION

The specification has been amended as follows:

Page 14

The heading at line 22 has been amended as follows:

DESCRIPTION OF THE ~~PREFERRED EMBODIMENTS~~PRESENT INVENTION

Page 15

The paragraph at lines 6-15 has been amended as follows:

FIG. 2 is a block diagram showing a configuration of the ink-jet printer and host PCs included in the above ink-jet printer system. ~~Ink-jet~~ The ink-jet printer 2 is comprised of an ink head 21, a recovery processor 22 for performing a recovery treatment (head cleaning) of this ink head 21, a storage ~~portion(non-volatile memory)~~ portion (non-volatile memory) 23 for storing the print completion time of the last printing operation, a controller 24 for controlling printing, recovery treatment and the like, a communication circuit 25 for communications ~~with host~~ with the host PCs 3a to 3c.

Pages 15-16

The paragraph beginning on page 15, line 16 and ending on page 16, line 1 has been amended as follows:

~~Ink head~~ The Ink head 21 has nozzles and pressure-producing elements (piezoelectric elements, heat resistors, or the like) and ejects ink from the nozzles by the

pressures generated from the pressure producing elements onto a recording medium to print a pictorial image such as characters, symbols etc. During this printing operation, ~~ink head~~ the ink head 21 moves in the main scan ~~direction(in~~ direction (in the direction perpendicular to the feed direction of the recording medium) by means of an unillustrated drive motor. This drive motor may also have the function of moving the recording medium in addition to the function of moving the ink head.

Page 16

The paragraph at lines 2-9 has been amended as follows:

~~Recovery~~ The recovery processor 22 is controlled ~~by controller~~ by the controller 24 to effect a necessary recovery treatment ~~of ink~~ of the ink head 21. Determination of the inactive time will be described later. This recovery treatment is a treatment, for example, to clear ink clogging in the nozzles by driving the pressure producing elements over a predetermined period of time with the condition ~~of ink~~ of the ink head 21 being set at the initial position where it does not oppose the recording medium.

The paragraph at lines 10-17 has been amended as follows:

~~Storage~~ The storage portion 23, based on the current time supplied from any of the host PCs 3a to 3c, updates and stores the completion time of a printing operation when the printing operation ends. It should be noted ~~that storage~~ that the storage portion 23 is backed up by an unillustrated power battery separated from the main power

~~supply(not~~ supply (not shown) ~~of ink-jet~~ of the ink-jet printer 2 so that it can hold the completion time of the last printing operation if the main power supply is shut down.

Pages 16-17

The paragraph beginning on page 16, line 18 and ending on page 17, line 5 has been amended as follows:

~~Controller~~ The controller 24 governs the data transmission/reception with each of host PCs 3a to 3C by way of communication circuit 25. When controller 24 receives a print request issued from any one of host PCs 3a to 3c, it outputs a printing response including the completion time which has been stored in the storage means and sends to the host PC which issued the print request. The host PC which had issued the print request, transmits print data in response to the printing response from the controller, and controller 24, based on the thus transferred print data, drives ink head 21 to perform the printing operation. If the received printing data includes a recovery treatment command, controller 24 causes recovery processor 22 to effect a necessary recovery treatment.

Page 17

The paragraph at lines 6-11 has been amended as follows:

~~Host~~ The host PC 3a is comprised of a clock 31, controller 32, display content controller 33 and a communication circuit 34. ~~Clock~~ The clock 31 is backed up by an unillustrated power battery independent from the main power supply (not shown) ~~of host~~

of the host PC 3a so that it can indicate the current time if the main power supply is shut down.

The paragraph at lines 12-25 has been amended as follows:

~~Controller~~ The controller 32, based on the processing program stored in an unillustrated storage portion, effects various processes including a printing data creating process and also functions as a print control means of this invention. Therefore, ~~controller~~ the controller 32 has an inactive time calculator 32a and a recovery treatment controller 32b. This inactive time calculator 32a compares the current time indicated ~~by clock~~ by the clock 31 with the completion time transferred ~~from ink jet~~ from the ink-jet printer 2, to compute the inactive time ~~of ink jet~~ of the ink-jet printer 2. ~~Recovery~~ The recovery treatment controller 32b, based on the inactive time, determines if a recovery treatment is needed ~~in ink jet~~ in the ink-jet printer 2. If a recovery treatment was determined to be needed, the controller 32b issues a recovery treatment command ~~to ink jet~~ to the ink-jet printer 2 by way ~~of communication~~ of the communication circuit 34.

Page 18

The paragraph at lines 1-4 has been amended as follows:

~~Display controller~~ The display content controller 33, based on the display data output from controller 32, drives a display ~~device 4a. Communication~~ device 61. The communication means 34 is used to establish communications ~~between ink jet~~ between the ink-jet printer 2 and other host PCs 3b and 3c.

The paragraph at lines 5-6 has been amended as follows:

It should be noted ~~that host~~ that the host PCs 3b and 3c are also configured in the same manner ~~as host~~ as the host PC 3a.

The paragraph at lines 7-21 has been amended as follows:

FIG. 3 is a flowchart showing the processing steps during printing by a host PC included in the above ink-jet printer system 1. This flowchart illustrates, as an example, a case where printing data prepared ~~by host~~ by the host PC 3a is printed ~~using ink-jet~~ using the ink-jet printer 2. When a print job of the printing data created ~~by host~~ by the host PC 3a is carried out, ~~controller~~ the controller 32 ~~of host~~ of the host PC 3a first issues a print request ~~to ink-jet~~ to the ink-jet printer 2(101). ~~Controller~~ The controller 24 ~~of ink-jet~~ of the ink-jet printer 2, in response to this print request, sends the completion time being stored ~~in storage~~ in the storage portion 23 ~~to host~~ to the host PC 3a. ~~Controller~~ The controller 32, receiving the completion ~~time(102)~~time (102), computes the inactive time of print processing by computing the difference between the completion time and the current time indicated by clock 31 (103) and determines whether or not the calculated inactive time is valid or ~~not(104)~~not (104).

Pages 18-19

The paragraph beginning on page 18, line 22 and ending on page 19, line 13 has been amended as follows:

In this case, if the computed inactive time is incorrect as in such a case where the completion time is unknown or where the completion time indicates a time after the current time, ~~controller~~ the controller 32 sets up a predetermined value equal to or greater than the reference time as the inactive time (105) and effects a warning routine (106). Here, the reference time is the time based on which it is determined whether the recovery treatment ~~in ink-jet~~ in the ink-jet printer 2 is performed. As described later, if the printing operation ~~in ink-jet~~ in the ink-jet printer 2 has not been used over the reference time, it will be determined that a recovery treatment is needed. The warning routine is the procedure for informing the user ~~of host~~ of the host PC 3a that the current time being stored ~~in storage~~ in the storage portion 23 ~~of ink-jet~~ of the ink-jet printer 2 or that of ~~clock~~ the clock 31 ~~in host~~ in the host PC 3a is incorrect. For example, this warning can be provided by displaying such an indication on the display screen ~~of display device 4a~~ of the display device 6aor by making an alarm sound using an unillustrated speaker.

Page 19

The paragraph at lines 14-25 has been amended as follows:

In the above way, when the computed inactive time is invalid, the inactive time is replaced by a predetermined value which is equal to or greater than the reference time.

Thus, a recovery treatment will be performed when the inactive time cannot be computed correctly such as when the completion time being stored ~~in storage~~ in the storage portion 23 ~~of ink-jet~~ of the ink-jet printer 2 is incorrect, when the transmission of the completion time could not be made correctly, or when the current time indicated ~~by clock 31 of host~~ by the clock 31 of the host PC 3a is incorrect. Thereby, in practice it is possible to positively prevent degradation of image quality due to ink clogging by assuming that the printing operation of ink-jet printer 2 has been unused.

Page 20

The paragraph at lines 1-11 has been amended as follows:

Next, ~~controller~~ the controller 32 determines whether the inactive time is equal to or longer than the reference ~~time(107)~~time (107). If the inactive time is equal to or longer than the reference time, the controller issues a recovery treatment command ~~to ink-jet~~ to the ink-jet printer 2(108). If the inactive time is shorter than the reference time, the printing data is directly transferred ~~to ink-jet~~to the ink-jet printer ~~2(109)~~2 (109). ~~Ink-jet~~ The ink-jet printer 2, as it receives the recovery treatment command, causes ~~recovery~~ the recovery processor 22 to start the treatment for removing ink clogging in the nozzles and then starts printing to recording media as it is receiving the printing data.

The paragraph at lines 12-17 has been amended as follows:

In this way, when the inactive time is equal to or longer than the reference time, ~~ink-jet~~ the ink-jet printer 2 performs its recovery treatment, thus enabling itself to print

without ink clogging which would have occurred during the time the printing operation was inactive and to maintain beneficial printed conditions in the images on the recording media.

The paragraph at lines 18-24 has been amended as follows:

When the printing operation ~~in ink-jet~~ in the ink-jet printer 2 is completed and the print end data is transmitted ~~from ink-jet~~ from the ink-jet printer 2(110), ~~controller~~ the controller 32, on condition that no warning routine is being effected, transmits the current time data measured ~~by clock 31 to ink-jet~~ by the clock 31 to the ink-jet printer 2(111, 112). ~~Ink-jet~~ The ink-jet printer 2, as it receives the current time data, updates ~~storage~~ the storage portion 23 and stores the completion time data therein.

Pages 20-21

The paragraph beginning on page 20, line 25 and ending on page 21, line 6 has been amended as follows:

In this way, since the completion time of the printing operation is supplied ~~from host~~ from the host PC 3a ~~to ink-jet~~ to the ink-jet printer 2, it is possible to set the completion time of the last printing operation at the ink-jet printer 2 side based on the clock provided as a general part of a host personal computer, without the necessity of providing an extra clock for ink-jet printer 2.

Page 21

The paragraph at lines 7-17 has been amended as follows:

On the other hand, when the warning routine is effected resulting from the computed inactive time being invalid, ~~controller~~ the controller 32 ends the operation without transferring the current time data. That is, there is a possibility that any anomaly of the current time measured ~~by clock 31 of host~~ by the clock 31 of the host PC 3a may cause the inactive time to be invalidated. If an incorrect current time is set as the completion time of the printing operation at the ink-jet printer 2 side, it becomes impossible to correctly compute the inactive time for a subsequent printing operation made by any ~~of other~~ of the other host PCs 3b and 3c.

Pages 21-22

The paragraph beginning on page 21, line 18 and ending on page 22, line 2 has been amended as follows:

Due to inconsistencies of the current time between individual clocks 31 ~~in host~~ in the host PCs 3a to 3c, there are cases in which the current time which is about to be stored as the completion time ~~into storage~~ into the storage portion 23 indicates a time before the previous completion time which has been stored. In such a case, that is, when the received current time indicates an earlier time than the previous completion time being stored ~~in storage~~ in the storage portion 23, ~~controller~~ the controller 24 ~~of ink-jet~~ of

the ink-jet printer 2 controls so as not to update the storage content ~~in storage~~ in the storage means 23 with the received current time.

Page 22

The paragraph at lines 3-12 has been amended as follows:

Suppose, for example, the current time indicated ~~by clock 31 of host~~ by the clock 31 of the host PC 3a presents an earlier time. If this earlier current time is stored as the completion time ~~into storage~~ into the storage portion 23, the inactive time will be determined to be longer than its actual time when the printer is used next by another host PC having a correct clock 31 and hence an unnecessary recovery treatment may be performed. In contrast, when the time being stored ~~in storage~~ in the storage portion 23 is not updated as above, no unnecessary recovery treatment will be effected because the inactive time will not be determined to be long.

The paragraph at lines 13-21 has been amended as follows:

Conversely, if the current time measured ~~by clock 31 of host~~ by the clock 31 of the host PC 3a is fast, there is a possibility in the above configuration that a necessary recovery treatment may not be performed. However, if it is considered ~~that ink-jet~~ that the ink-jet printer 2 is shared by multiple host PCs 3a to 3c, a long term of inactivity of the printer will hardly occur. Therefore, the above setting is sufficiently effective and significant to prevent an unnecessary recovery treatment from being effected.

Pages 22-23

The paragraph beginning on page 22, line 22 and ending on page 23, line 7 has been amended as follows:

Here, it is possible to configure a system such that, if the current time ~~on clock~~ on the clock 31 indicates a time before the completion time transferred ~~from ink jet~~ from the ink-jet printer 2, controller 32 of host PC 3a may provide warning at the warning routine (106) or ~~controller~~ the controller 24 of ink-jet printer 2 may inform other host PCs 3b and 3c after the end of the printing operation so that warning is provided through the display device or speaker of the host PCs 3b and 3c having received the information while upon the printing operation, a predetermined value equal to or greater than the reference time may be set as the inactive time.

Page 23

The paragraph at lines 8-14 has been amended as follows:

By this configuration, the user of any one ~~of host~~ of the host PCs 3a to 3c included in system 1 is able to know the necessity of readjustment ~~of clocks of host~~ of the clocks of the host PCs 3a to 3c while a necessary recovery treatment can be effected so as to prevent image degradation, by taking into consideration the case where the actual inactive time is equal to or longer than the reference time.

The paragraph at lines 15-17 has been amended as follows:

Next, the relationship between the inactive time ~~of ink-jet~~ of the ink-jet printer 2 and the number of ink ejections needed in the recovery treatment will be briefly described.

Pages 23-24

The paragraph beginning on page 23, line 18 and ending on page 24, line 9 has been amended as follows:

For a case where the inactive time is relatively short (e.g., within eight hours), the number of ink ejections to be needed is approximately proportional to the inactive time. Therefore, the longer the inactive time, the more the number of ink ejections should be set. In contrast, for a case where the inactive time being short, a fewer number of ink ejections can be set. Such proportional relationship is determined depending ~~on ink~~on the ink head 21, the physical and chemical characteristics of the ink used, and the ambient usage conditions such as temperature, humidity and the like. On the other hand, for a case where the inactive time is long (e.g., longer than eight hours), the number of ink ejections needed for recovery becomes approximately constant regardless of the duration of the inactive time. This fixed number of ink ejections is the number of ink ejections required to replace the entire ink residing in the channel ~~in ink~~in the ink head 21 with fresh ink.

Page 25

The paragraph at lines 2-12 has been amended as follows:

As has been described, the ink-jet printer system 1 according to this embodiment ~~has storage~~ has the storage portion 23 on the ink-jet printer 2 side so as to update and store the current time ~~on clock~~ on the clock 31 incorporated in each ~~of host~~ of the host PCs 3a to 3c as the completion time ~~into storage~~ into the storage portion 23. Further, when one ~~of host~~ of the host PCs 3a to 3c performs a print operation, the host PC reads out the completion time being stored ~~in storage~~ in the storage portion 23 and compares it with the current time to determine the inactive time and command a necessary recovery treatment in accordance with the duration of the inactive time ~~to ink jet~~ to the ink-jet printer 2.

The paragraph at lines 13-21 has been amended as follows:

With this configuration, when a single ink-jet printer 2 is shared by multiple host PCs 3a to 3c, the completion time of the previous printing job is always stored in the ink-jet printer 2. Therefore, based on this completion time, it is possible to exactly determine the inactive time ~~of ink jet~~of the ink-jet printer 2. As a result, this configuration is able to avoid unnecessary head cleaning which would have been performed even after a short inactive time and reduce it in number, contributing to its economy.

Pages 25-26

The paragraph beginning on page 25, line 22 and ending on page 26, line 4 has been amended as follows:

Further, if the exact inactive time cannot be ~~computed this~~ computed, this ink-jet printer system 1 is adapted to set the inactive time at a predetermined value equal to or greater than the reference time and warn the user. In this way, if the inactive time is unknown, it is possible to perform the treatment by assuming the worst case. Therefore, it is possible to positively prevent operational failures and degradation of print quality.

Page 26

The paragraph at lines 5-11 has been amended as follows:

Even in a case where any of ~~clocks 31 of host~~ the clocks of the host PCs 3a to 3c holds the wrong time, the system of this embodiment is able to avoid the execution of unnecessary recovery treatment due to wrongly determining the inactive time to be long in spite of its being short, by prohibiting ~~controller~~ the controller 24 of ~~ink jet~~ the ink-jet printer 2 from updating the completion time ~~in storage~~ in the storage portion 23.

The paragraph at lines 19-25 has been amended as follows:

FIG. 5 is a block diagram showing a configuration of an ink-jet printer and host PCs included in the ink-jet printer system according to the second embodiment. ~~Host~~ A host PC 30a has a clock controller 35 added compared to the configuration of host PC 3a

shown in FIG. 2. Here, it should be noted that other host PCs 30b and 30c included in system 10 are configured in the same manner ~~as host~~ as the host PC 30a.

Page 27

The paragraph at lines 1-8 has been amended as follows:

In ink-jet printer system 10 according to this embodiment, ~~host~~ the host PC 30a receives a signal of the correct current time from ~~clock~~ the clock server 5 at regular intervals so that ~~clock~~ the clock controller 35 corrects the current time measured by ~~clock~~ the clock 31 to agree with that of ~~clock~~ the clock server 5. For example, a signal of correct time is issued from ~~clock~~ the clock server 5 to ~~clock~~ the clock controller 35 of ~~host~~ the host PC 30a ~~every an hour~~ every hour, the time on ~~clock~~ the clock 31 is rewritten by this clock controller 35.

The paragraph at lines 9-18 has been amended as follows:

In this configuration, the clocks 31 of all the host PCs 3a to 3c in system 10 are set at correct time with reference to ~~clock~~ the clock server 5, whereby no inconsistency of the current time on ~~clocks 31 of host~~ the clocks 31 of the host PCs 30a to 30c will, any longer, occur. Therefore, it is possible to store the correct completion time into ~~storage~~ the storage portion 23 when a printing operation is completed. This makes it possible for ~~inactive~~ the inactive time calculator 32a in ~~controller~~ the controller 32 of each host PC 30a to 30c to compute the exact inactive time from the exact completion time and exact current time when a next printing job is started.

Pages 27-28

The paragraph beginning on page 27, line 19 and ending on page 28, line 1 has been amended as follows:

When computing the inactive time, there is no risk of the problem whereby the current time being about to be stored into storage portion 23 happens to be before the completion time of the previous printing operation being stored in the storage. Therefore, ~~inactive~~ the inactive time calculator 32a is able to calculate the correct inactive time, so that it is possible to instruct ~~ink-jet~~ the ink-jet printer 2 to perform the least number of recovery treatments.

Page 28

The paragraph at lines 2-7 has been amended as follows:

In this embodiment, though the current time measured by ~~clocks 31 of host~~ the clocks 31 of the host PCs 30a to 30c when the printing is completed is stored as the completion time into the storage portion 23 ~~of ink-jet~~ of the ink-jet printer 2, the current time measured by ~~clock~~ the clock server 5 at the timing of printing end may be transferred to ink-jet printer 2.

The paragraph at lines 8-16 has been amended as follows:

In this case, the current time measured by ~~clock~~ the clock server 5 at the timing of printing end is stored as the completion time in the storage portion 23. Therefore, ink-jet printer 2 is able to hold the correct completion time. When a next printing operation

starts, the correct inactive time can be computed by ~~inactive~~ the inactive time calculator 32a. Based on this, ~~recovery~~ the recovery treatment controller 32b makes a correct decision as to recovery treatment so that ~~controller~~ the controller 24 causes ~~recovery~~ the recovery processor 22 to effect the recovery treatment.

Pages 28-29

The paragraph beginning on page 28, line 17 and ending on page 29, line 1 has been amended as follows:

Further, since ~~host~~ the host PCs 30a to 30c do not need to write the completion time of printing into ~~ink-jet~~ the ink-jet printer 2 after transferring the printing data to ~~ink-jet~~ the ink-jet printer 2, there is no need to monitor the completion of printing. Since there is no need for ~~host~~ the host PCs 30a to 30c to continuously run the printing processing program from transfer of the printing data up to the end of the printing process, it is possible to start other processing programs in each of ~~host~~ the host PCs 30a to 30c at an earlier stage, thus making it possible to improve the operating efficiencies of ~~host~~ the host PCs 30a to 30c.